Claims

3. In a Carrier Interferometry (CI) transmitter:

a CI coder adapted to encode at least one data sequence onto a CI code to produce at least one data-bearing code vector, and

a modulator adapted to modulate the at least one data-bearing code vector onto a plurality of subcarriers.

4. The CI transmitter recited in Claim 1 wherein the modulator includes an invertible transform module.

5. The CI transmitter recited in Claim 2 wherein the invertible transform module is adapted to perform at least one of a Fourier transform, a chirp Z transform, and a sliding transform.

6. The CI transmitter recited in Claim 1 wherein at least one of the modulator and the CI coder is adapted to scramble CI codes generated by the CI coder.

7. The CI transmitter recited in Claim 1 wherein at least one of the modulator and the CI coder is adapted to provide frequency variations to the subcarriers.

8. The CI transmitter recited in Claim 1 wherein the CI coder is adapted to provide for channel coding.

9. The CI transmitter recited in Claim 1 wherein at least one of the modulator and the CI coder is adapted to dynamically allocate subcarriers for at least one communication link.

10. The CI transmitter recited in Claim 1 wherein the CI coder is adapted to perform at least one CI coding algorithm configured to non-uniformly spread the at least one data sequence across the plurality of subcarriers.

11. In a Carrier Interferometry (CI) receiver:

a demodulator adapted to demodulate at least one data-bearing CI code vector modulated on a plurality of subcarriers, and

a CI decoder adapted to decode at least one received data sequence impressed onto the CI code vector.

12. The CI receiver recited in Claim 9 wherein the demodulator includes an invertible transform module.

13. The CI receiver recited in Claim 10 wherein the invertible transform module is adapted to perform at least one of a Fourier transform, a chirp Z transform, and a sliding transform.

14. The CI receiver recited in Claim 9 wherein at least one of the demodulator and the CI decoder is adapted to descramble CI codes.

15. The CI receiver recited in Claim 9 wherein at least one of the demodulator and the CI decoder is adapted to compensate for subcarrier frequency variations.

16. The CI receiver recited in Claim 9 wherein the CI decoder is adapted to provide for channel decoding.

17. The CI receiver recited in Claim 9 wherein at least one of the CI decoder and the demodulator are adapted to perform successive interference cancellation.

18. A multi-carrier signal comprising:

at least one set of complex subcarrier weights embodied in a predetermined plurality of frequency-varying subcarriers and adapted to:

map a plurality of data symbols to a plurality of pulse positions for producing a sequence of modulated pulses resulting from a superposition of the predetermined plurality of frequency-varying subcarriers.

19. The multi-carrier signal recited in Claim 18 wherein the complex sub-carrier weights are adapted to reduce the peak-to-average power of a signal transmission in a transmitter.

20. The multi-carrier signal recited in Claim 1 wherein the plurality of data symbols include at least one of a set of data symbols, including a spread-spectrum code, a multiple-access code, a channel code, a sequence of data symbols, a data-modulated spread-spectrum code, a data-modulated multiple-access code, a data modulated channel code, a data-modulated and channel-coded multiple-access code, a data-modulated and channel-coded spread-spectrum code, and a data-modulated spread-spectrum modulated multiple-access code.